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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,714	07/28/2003	Reuven Unger	P23589	7104

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EXAMINER

LEUNG, RICHARD L

ART UNIT	PAPER NUMBER
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3744

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,714

Applicant(s)

UNGER ET AL.

Examiner

Richard L. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Drawings

1. The drawings were received on 29 December 2004. These drawings are acceptable.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Support for the newly added limitation of "non-deformingly," required by all independent and dependent claims, could not be found in the original disclosure. As best understood, the specification is silent with regard to this characteristic and therefore does not provide sufficient enablement for the claimed invention. Since this limitation is regarded as introducing impermissible new matter, it will be disregarded in the treatment of the claims for the remainder of this action. This rejection may be overcome by explicitly pointing out where proper support for the limitation may be found in the original disclosure.

Claim Rejections - 35 USC § 103

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4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-4, 7-11, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (Admission) in view of JP 10-15661.

Regarding claims 1-4, 7-11, and 15-17, Admission discloses a reciprocating device, a conventional Stirling cycle refrigerator (Specification, Figs. 1-3) comprising a sealing container 10, a cylinder 20 provided inside the sealing container and filled with coolant gas, a cold finger tube 14 provided at one end of the sealing container 10, a displacer cylinder 30 provided within the cold finger tube, a displacer 32 configured to divide an inside of the displacer cylinder 30 into an expansion space 30b and a compression space 30a, a piston 22 configured to move together with the displacer within the cylinder, the piston and displacer configured to compress and expand the coolant gas, a linear motor unit 50 configured to drive the piston, a regenerator 40 configured to store and radiate thermal energy after absorbing thermal energy from the coolant gas, and an internal heat transfer member 17 connecting the cold finger tube 14 and the sealing container 10, as is already known in the art. Admission further discloses that said internal heat transfer member 17 is mounted inside of a transition member 16 with an external heat transfer member 18 mounted outside of said transition member 16, the external heat transfer member comprising a base 181 and an insertion groove (Fig. 3) configured to accept an adaptor 19 inserted therein. Admission fails to expressly disclose the inclusion of a base blocking protrusion or a groove blocking protrusion. Specifically, Admission fails to expressly disclose that said base comprises

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a base blocking protrusion radially extending from the base and configured to contact the transition member, said base blocking protrusion spaced axially inwardly from one end of the base and creates an axially extending channel between the transition member and the base, the channel configured to accept a brazing material therein. And Admission also fails to expressly disclose that said base comprises a groove blocking protrusion axially extending from a circumferential surface of the insertion groove and spaced axially inwardly from one end of the base and configured to contact the adaptor and create an axially extending channel between the adaptor and the base, the channel configured to accept a brazing material therein. JP 10-15661 (see DERWENT English abstract) teaches a method for the joining of pipes wherein one of the pipe members 4 is provided with blocking protrusions (projections) 5 spaced axially inwardly from one end of the pipe 4 and extending radially from the circumferential surface of the pipe 4 such that an axially extending channel 6 is formed between the members to be joined for accepting a brazing material 30 therein. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the reciprocating device disclosed by Admission the blocking protrusion taught by JP 10-15661 between the base of the heat transfer member and the transition member and/or between the insertion groove and adaptor as required by the claims, because the addition of the protrusions facilitates the formation of a more secure joint and prevents the brazing material from flowing out.

Regarding claim 14, it is not expressly disclosed by the combination of the Admission and JP 10-15661 that said groove blocking protrusion has a flat upper

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surface and smooth end surface. At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to have made the groove blocking protrusion in the combination of the Admission and JP 10-15661 to have a flat upper surface and smooth end surface because Applicant has not disclosed that having a flat upper surface and smooth end surface on the groove blocking protrusion provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the protrusions taught by JP 10-15661 because both protrusions perform the same function of controlling the brazing material at the joint.

6. Claims 5, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Admission) in view of JP 10-15661 as applied to claims 1, 10, and 15 above, and further in view of US 5333918 (Crout et al.). The combination of the Admission and JP 10-15661, as discussed above, demonstrates all the limitations of the claims, except for including a stepped portion on the inner circumferential surface of the base that makes contact with the transition member, a surface of the stepped portion configured to accept a brazing material thereon. Crout et al. teach a brazed tubing fitting assembly wherein a tube 5 is joined to a fitting 4 provided with a stepped portion (counter sunk groove) 2 in which brazing material 14 is inset (column 2, line 44 to column 3, line 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the combination of the Admission and JP 10-15661 the stepped portion taught by Crout et

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al. on the inner circumferential surface of the base that makes contact with the transition member as required by the claims, because Crout et al. demonstrates that such a stepped portion provides for a strong braze joint by controlling the flow of molten braze material.

7. Claims 6, 13, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Admission) in view of JP 10-15661 as applied to claims 1, 7, and 15 above, and further in view of US 6732905 B2 (Humpston et al.). Admission discloses an air pocket 18a on an area inside of the base 181 located between external heat transfer member 18 and transition member 16 (Fig. 3), and the combination of the Admission and JP 10-15661, as discussed above, demonstrates all the limitations of the claims, except for providing a vent hole configured to connect the air pocket to an area outside the base, or that the vent hole is configured such that air inside the air pocket is discharged during a brazing process. Humpston et al. teach a joint formed by soldering or brazing (column 2, line 40-41), wherein a pocket (cavity) 240 is provided with a vent hole 250 or 255 such that gas may escape from the cavity through vent hole 250 or 255 during the brazing process. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the air pocket in the combination of the Admission and JP 10-15661 with a vent hole to connect the air pocket with an area outside the base such that air may be discharged during brazing as taught by Humpston et al. because such a vent hole provides a means for gas to escape without having to bubble through the brazing material and create voids in the joint.

Response to Arguments

8. Applicants' arguments filed 29 December 2004 regarding the rejection of claims 1-19 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive.

Applicants assert that JP 10-15661 does not have protrusions that non-deformingly contact an adaptor as required by the claims. As stated above, the added limitation of "non-deformingly" is regarded as new matter, and therefore will not be considered unless a proper showing of support in the original disclosure is made. Consequently, the claims remain rejected on the same grounds provided in the last Office Action.

Applicants assert that use of the deforming projections of JP 10-15661 in the heat transfer device of the reciprocating device would render the device ineffective for transferring heat. Without a showing of evidence to support this allegation, the Examiner respectfully disagrees. As understood, heat is transferred through the heat transfer device by conduction through the parts of the device that are in physical contact. Using the projections taught by JP 10-15661 would conceivably produce a very snug fit between the parts involved, ensuring proper contact, and therefore allowing for the conduction of heat. Applicants' argument that the combination would be rendered inoperative is not persuasive.

Applicants assert that JP 10-15661 is directed toward non-analogous art and therefore the combination made in the rejection is improper. Examiner respectfully disagrees. The heat transfer members of the present invention and the admitted prior art are comprised of annular components that are coupled by brazing in order to

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function. JP 10-15661 provides a method for securely coupling annular components (pipes) using brazing. Since both the admitted prior art and JP 10-15661 involve joining hollow, annular components through brazing, it would have been reasonable for one of ordinary skill in the art to have turned to the teachings of JP 10-15661 to find a means for securing the components of the heat transfer device. Applicants' argument of non-analogous art is unpersuasive.

Applicants assert that combination of the prior art is based on improper hindsight reasoning and assert that there is lack of proper motivation to combine the prior art. Examiner respectfully disagrees. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The motivation for combining the admitted prior art with the teachings of JP 10-15661 are expressly provided for by the latter. As stated in the rejections, the addition of the protrusions, taught by JP 10-15661, facilitates the formation of a more secure joint and prevents the brazing material from flowing out. This advantage is explicitly taught by the reference (see English abstract). Since the motivation to combine is clearly recited in the rejections and is derived from the prior art

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reference itself, Applicants' arguments of improper hindsight and lack of motivation are not persuasive.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard L. Leung whose telephone number is 571-272-4811. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise L. Esquivel can be reached on 571-272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard L. Leung
Examiner
Art Unit 3744

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